

For : SYSTEMS AND METHODS FOR
DYNAMIC DETECTION AND PREVENTION OF
ELECTRONIC FRAUD AND NETWORK
INTRUSION

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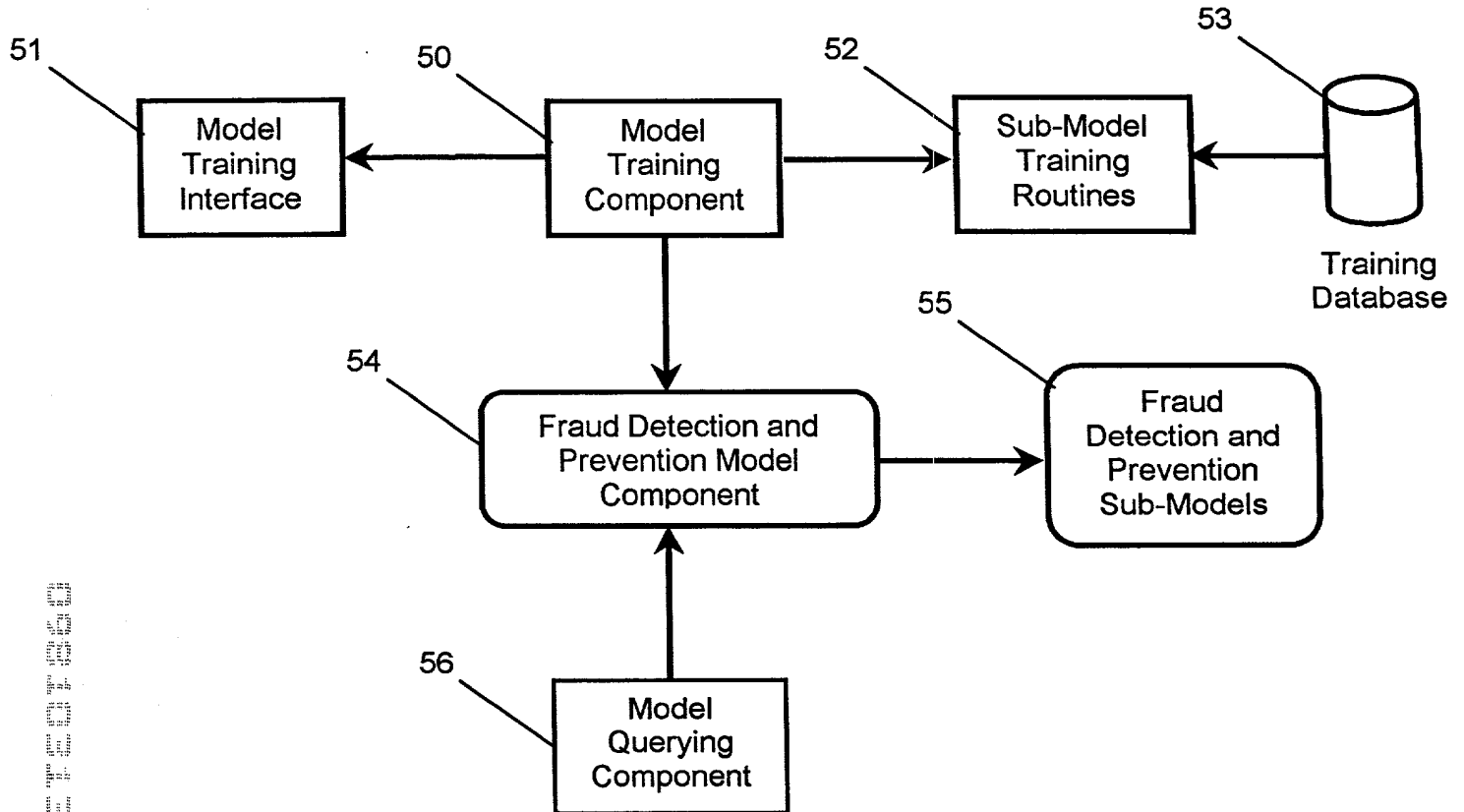


FIG. 1

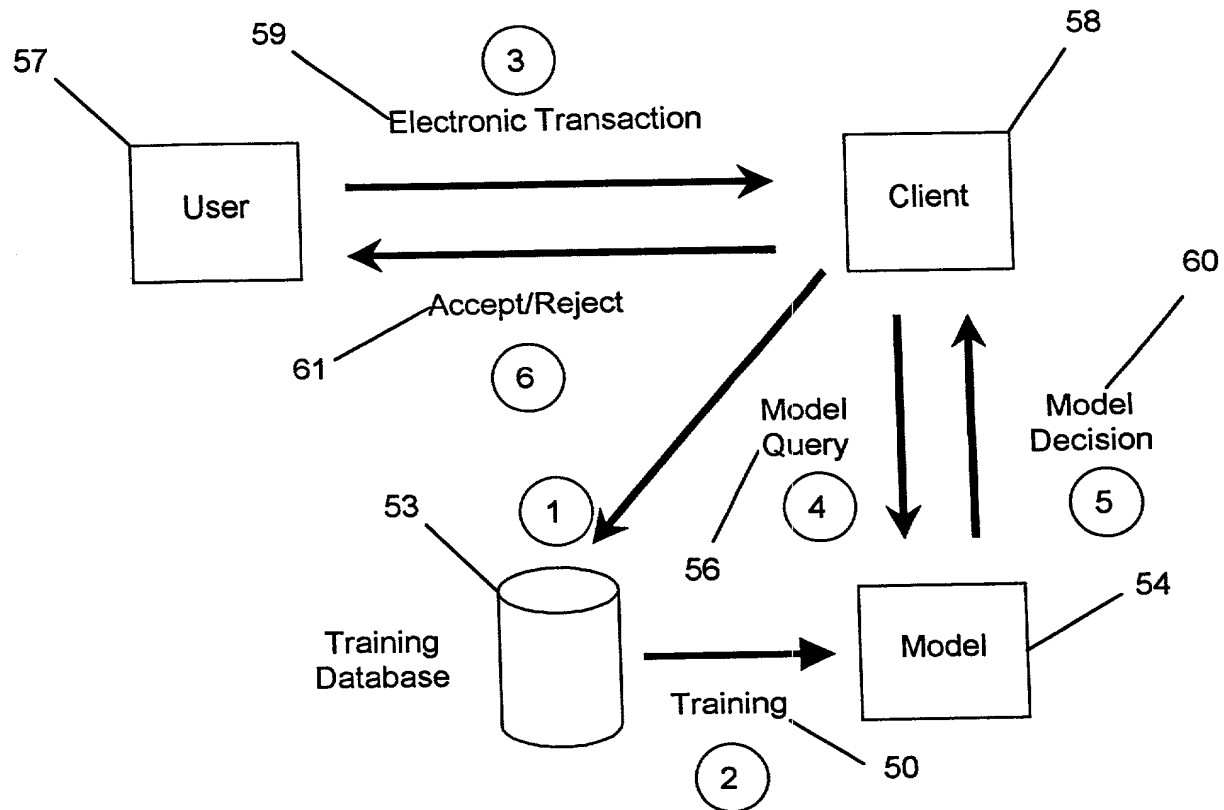


FIG. 2

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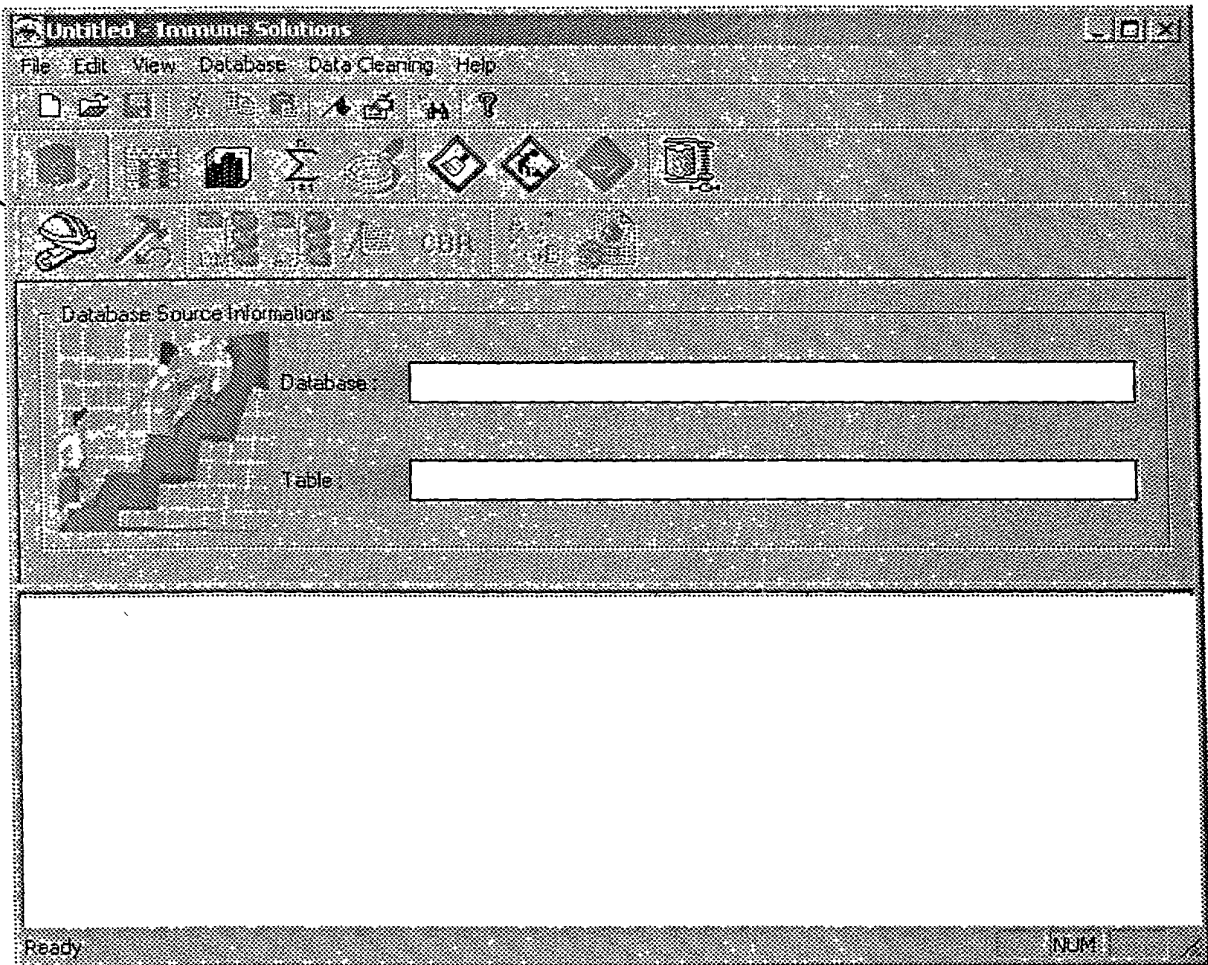


FIG. 3

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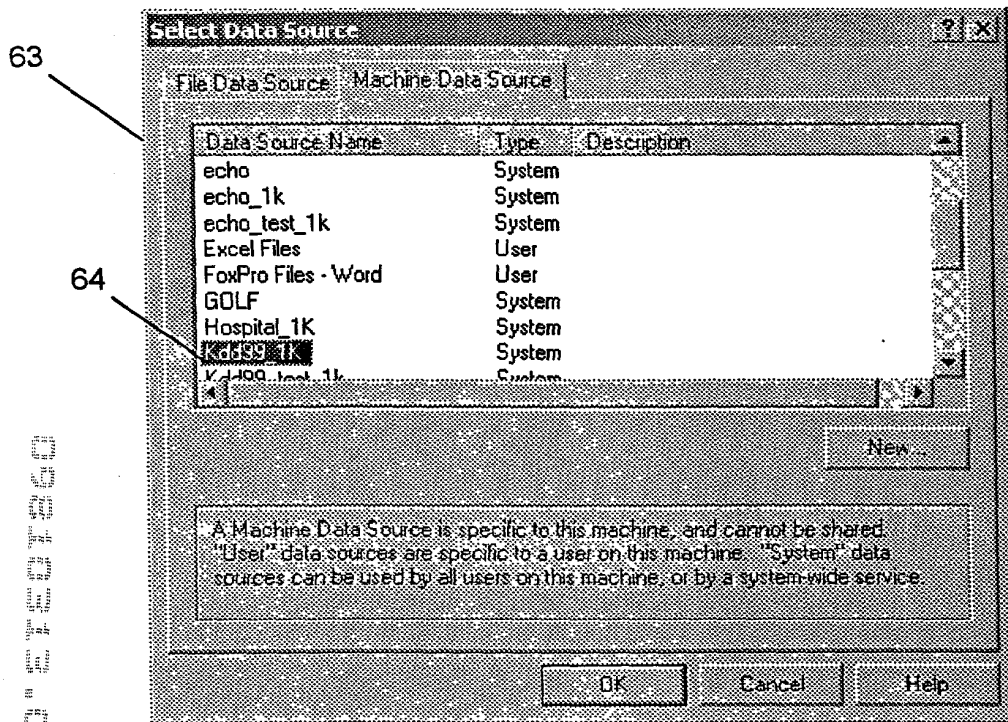


FIG. 4

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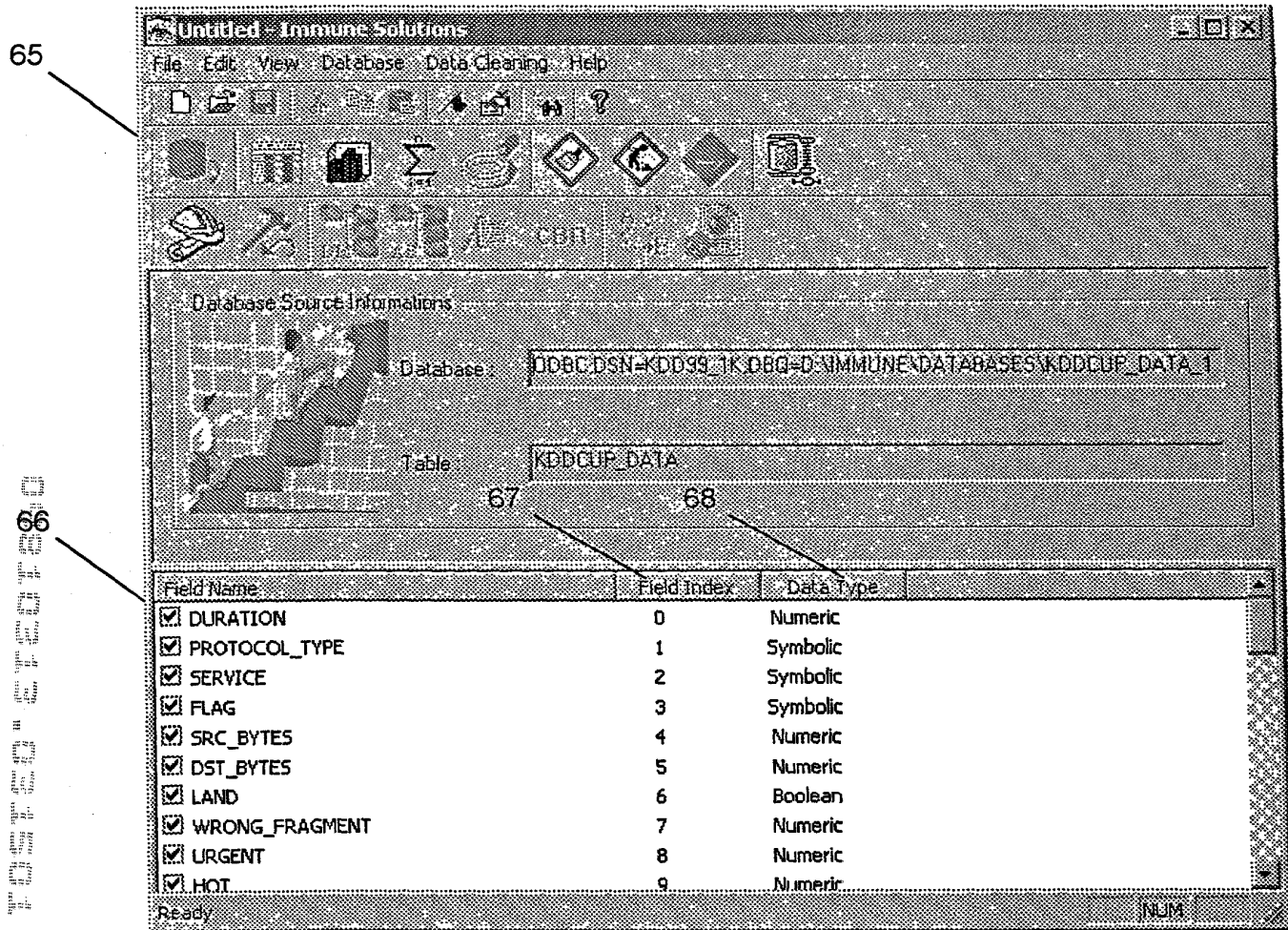


FIG. 5

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duration	protocol	type	service	flag	src_bytes	dst_bytes
0	tcp		auth	REJ	0	0
0	tcp		bgp	SO	0	0
0	tcp		courier	SO	0	0
0	tcp		ctf	SO	0	0
0	tcp		discard	SO	0	0
0	udp		domain_u	SF	46	46
0	udp		domain_u	SF	36	101
0	udp		domain_u	SF	42	42

FIG. 6

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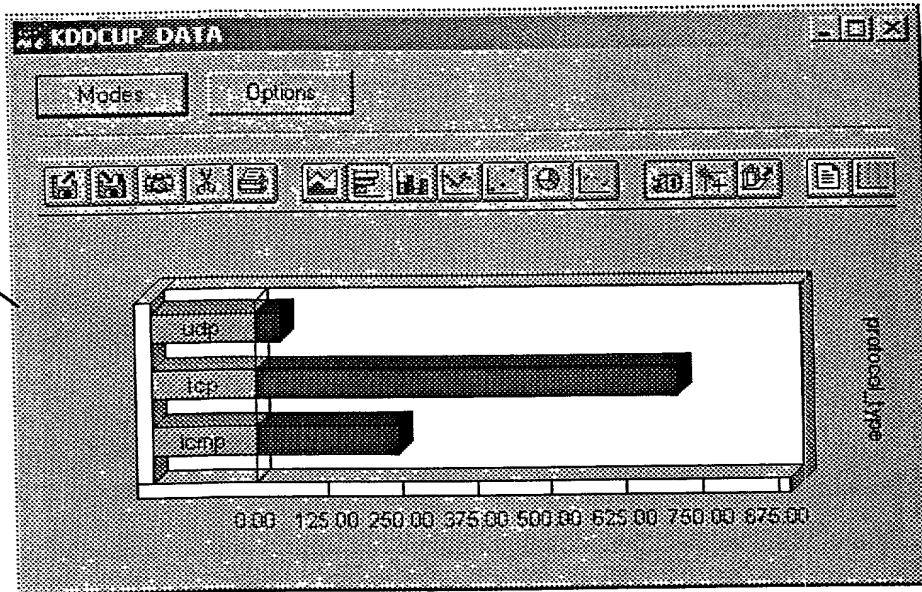


FIG. 7A

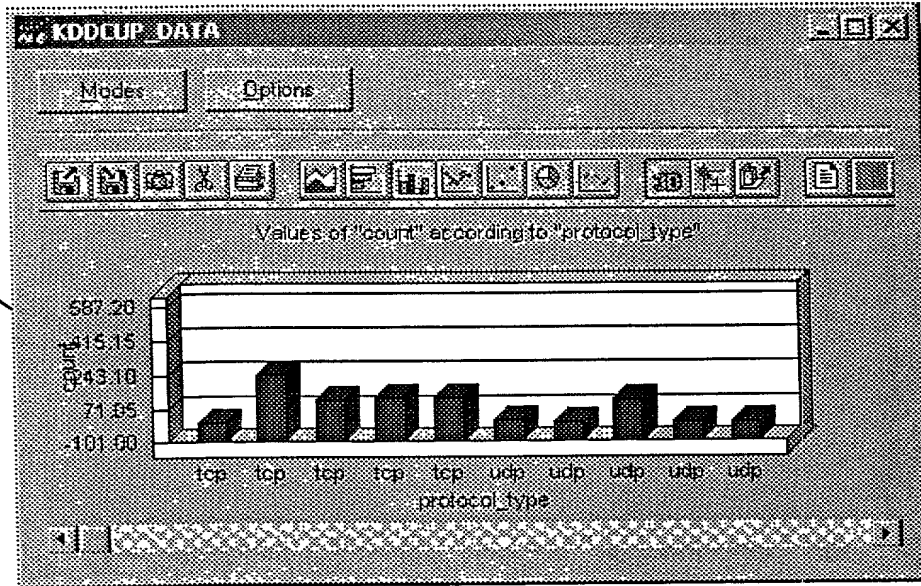


FIG. 7B

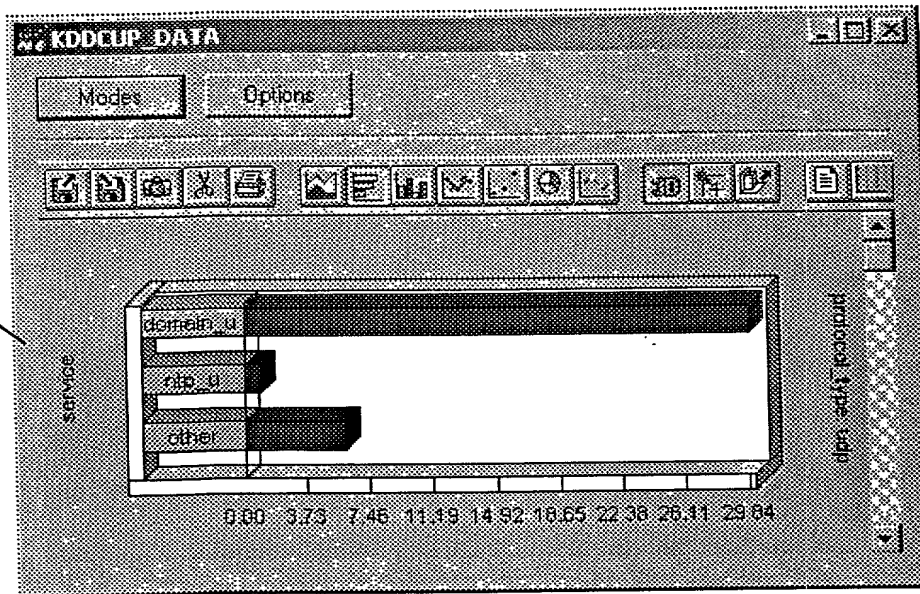


FIG. 7C

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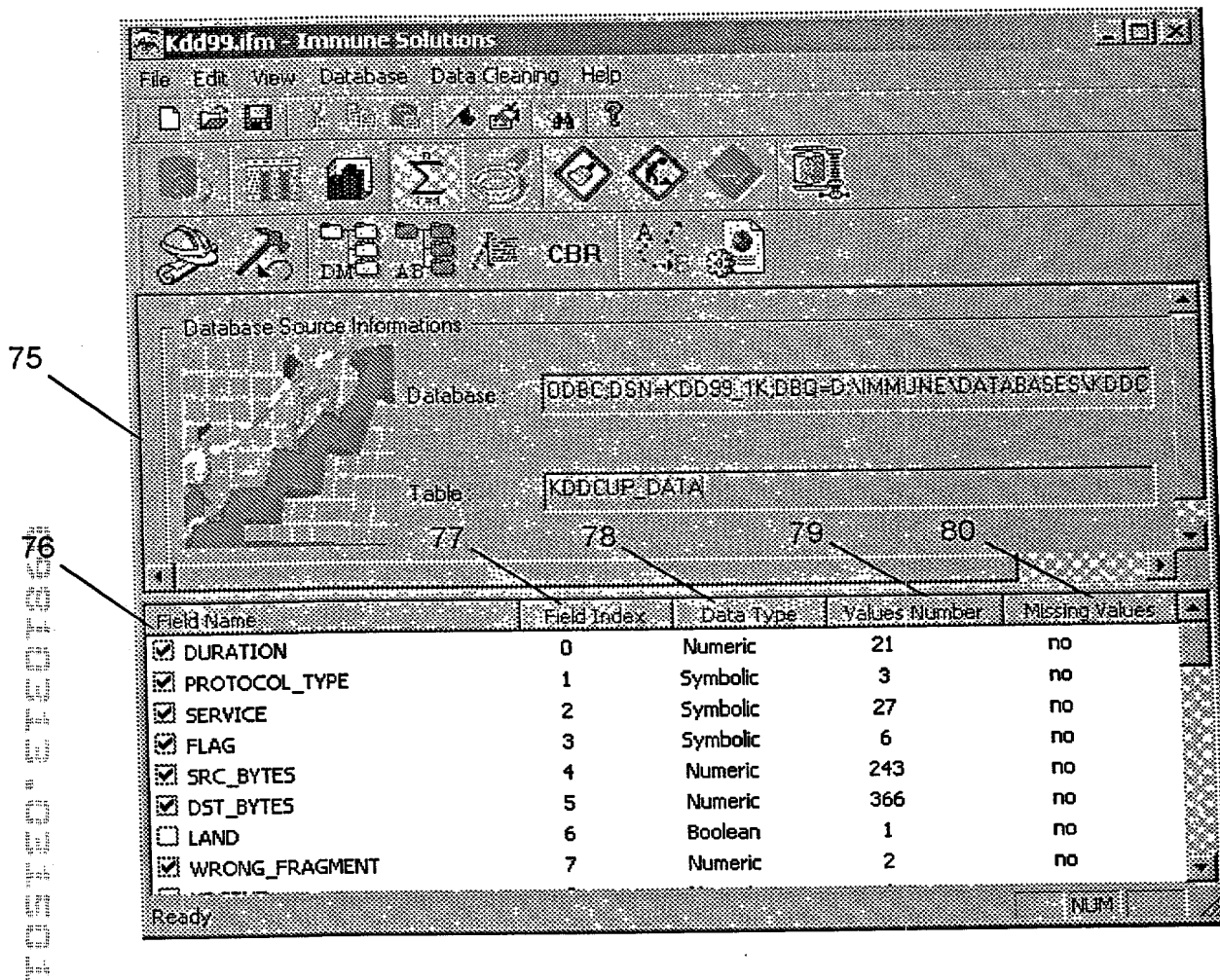


FIG. 8

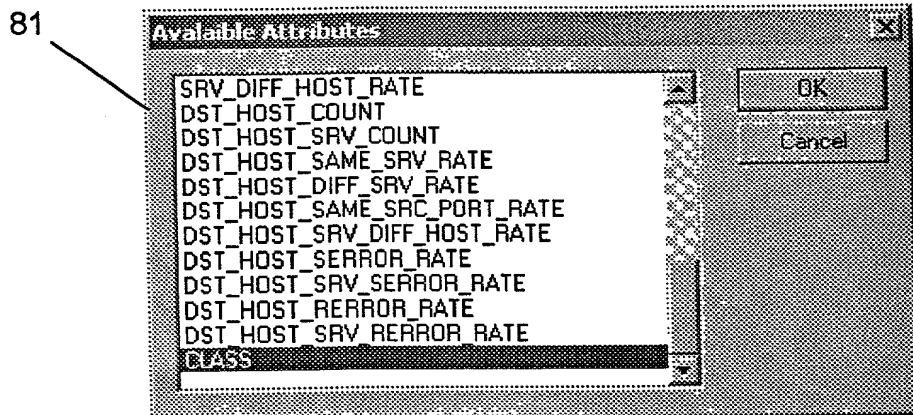


FIG. 9

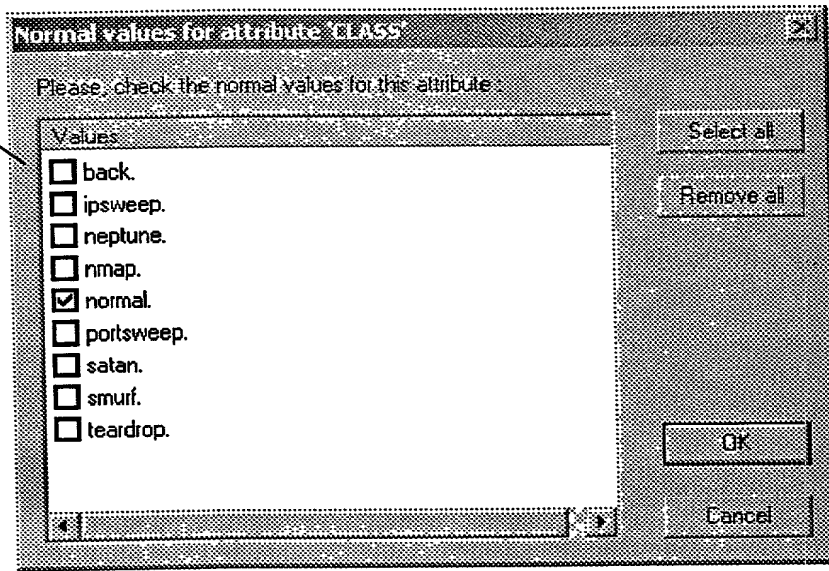


FIG. 10

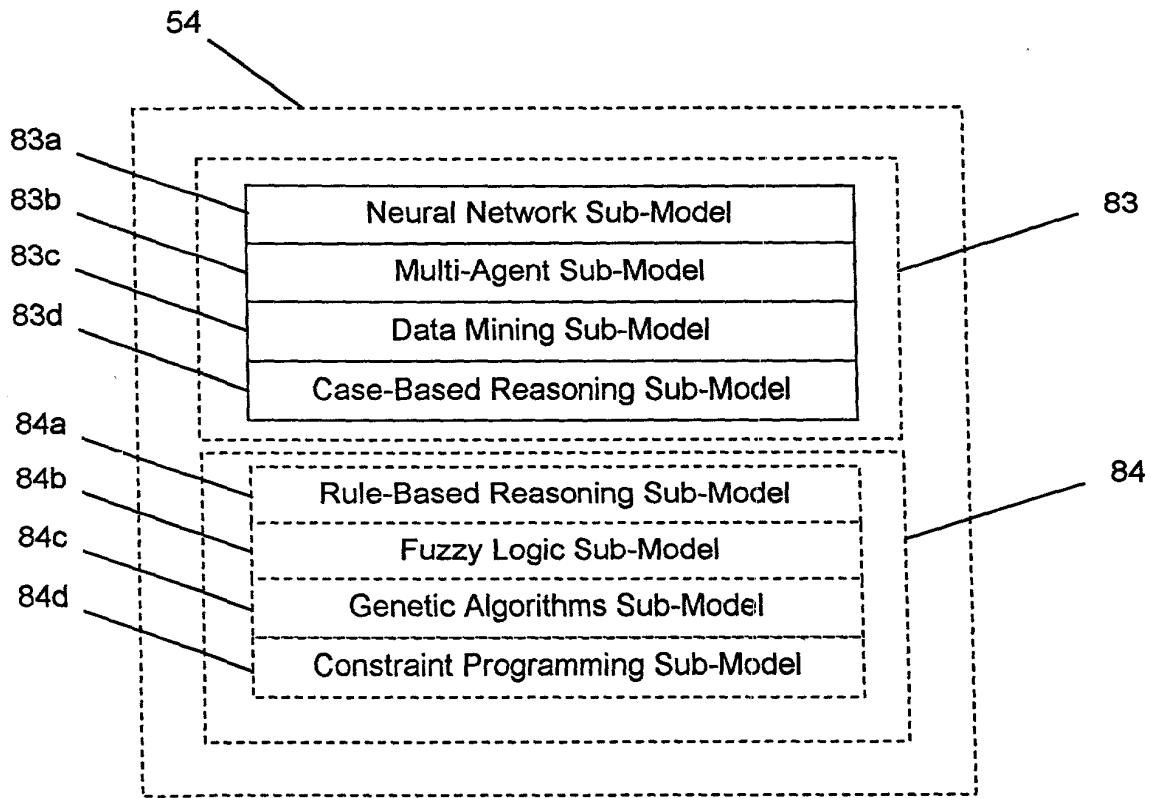


FIG. 11

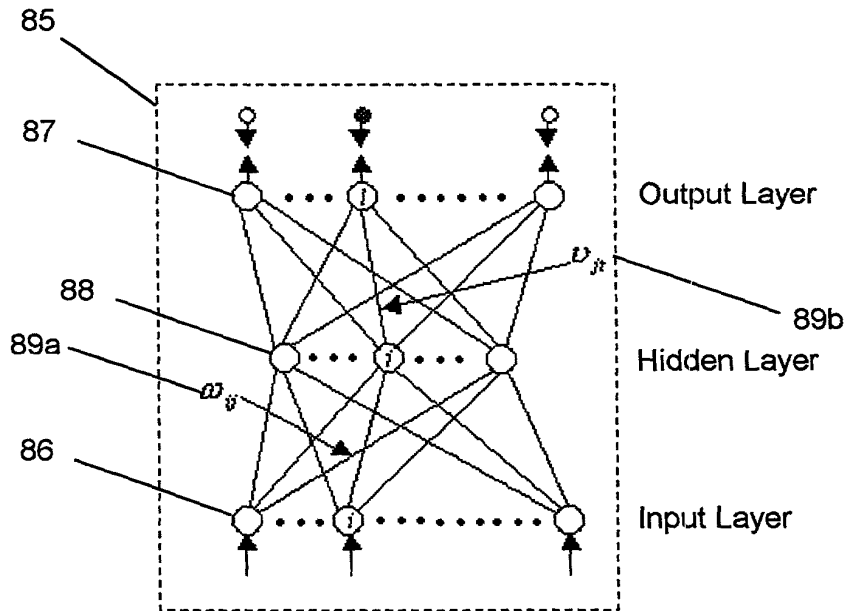


FIG. 12

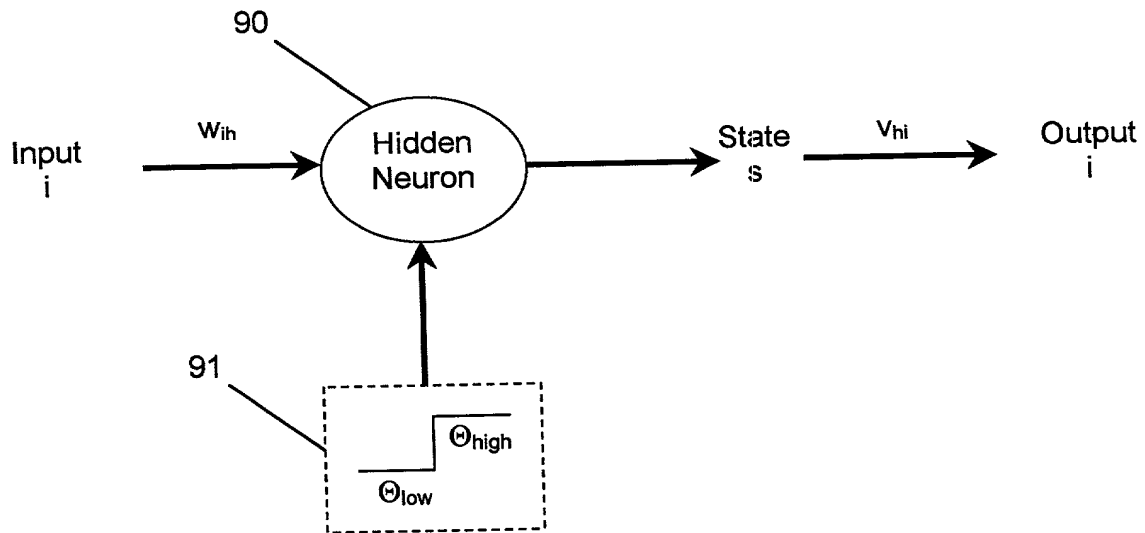
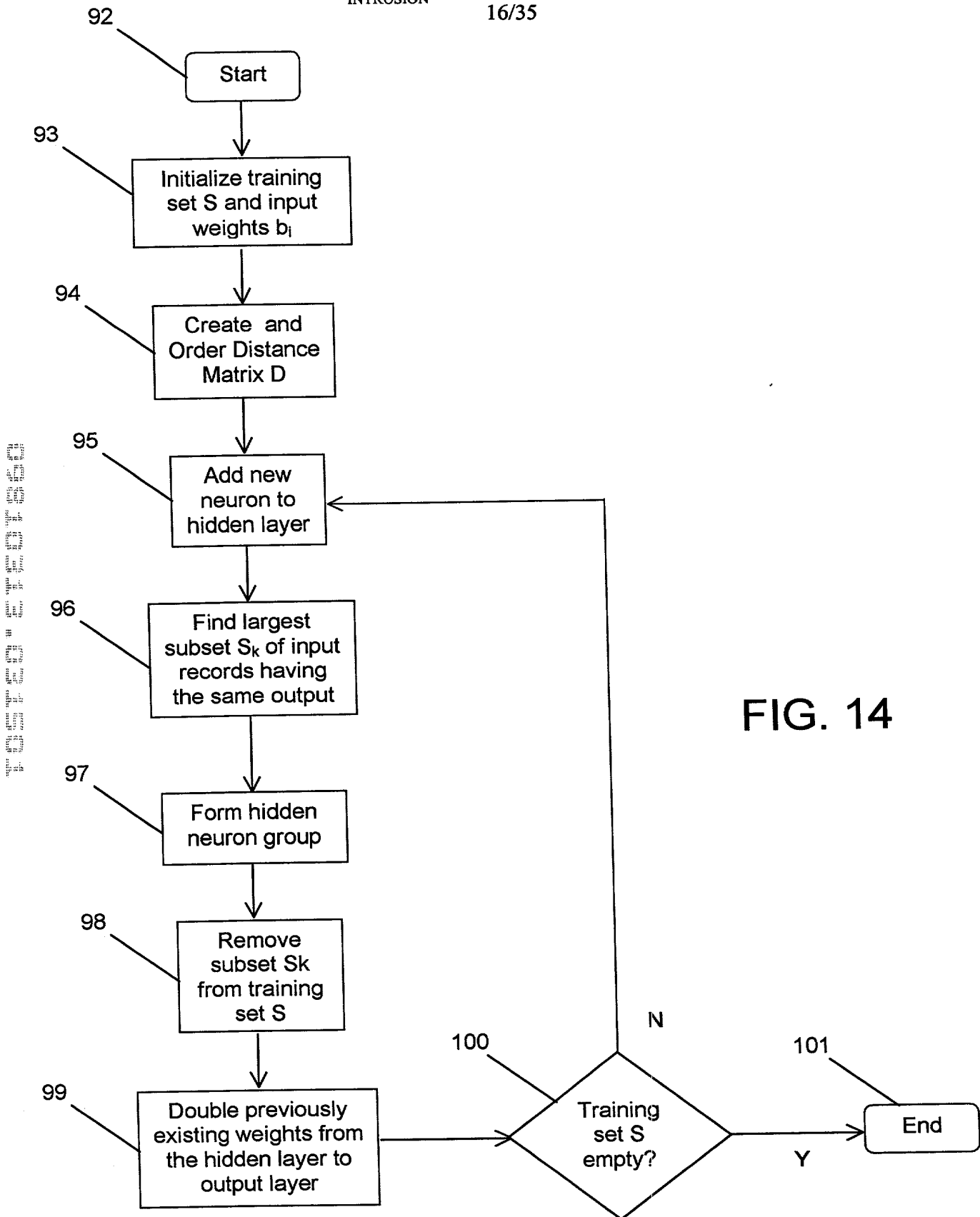


FIG. 13



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102a	Euclidean	$d(X_i, X_j) = \sqrt{\sum_{k=1}^M (X_{i,k} - X_{j,k})^2}$
102b	Manhattan	$d(X_i, X_j) = \sum_{k=1}^M X_{i,k} - X_{j,k} $
102c	Normalized Euclidean	$d(X_i, X_j) = \sqrt{\frac{1}{M} \sum_{k=1}^M \left(\frac{X_{i,k} - X_{j,k}}{\max_k - \min_k} \right)^2}$
102d	Normalized Manhattan	$d(X_i, X_j) = \frac{1}{M} \sum_{k=1}^M \left \frac{X_{i,k} - X_{j,k}}{\max_k - \min_k} \right $
102e	Weighted-Euclidean	$d(X_i, X_j) = \sqrt{\sum_{k=1}^M b_i * (X_{i,k} - X_{j,k})^2}$

FIG. 15

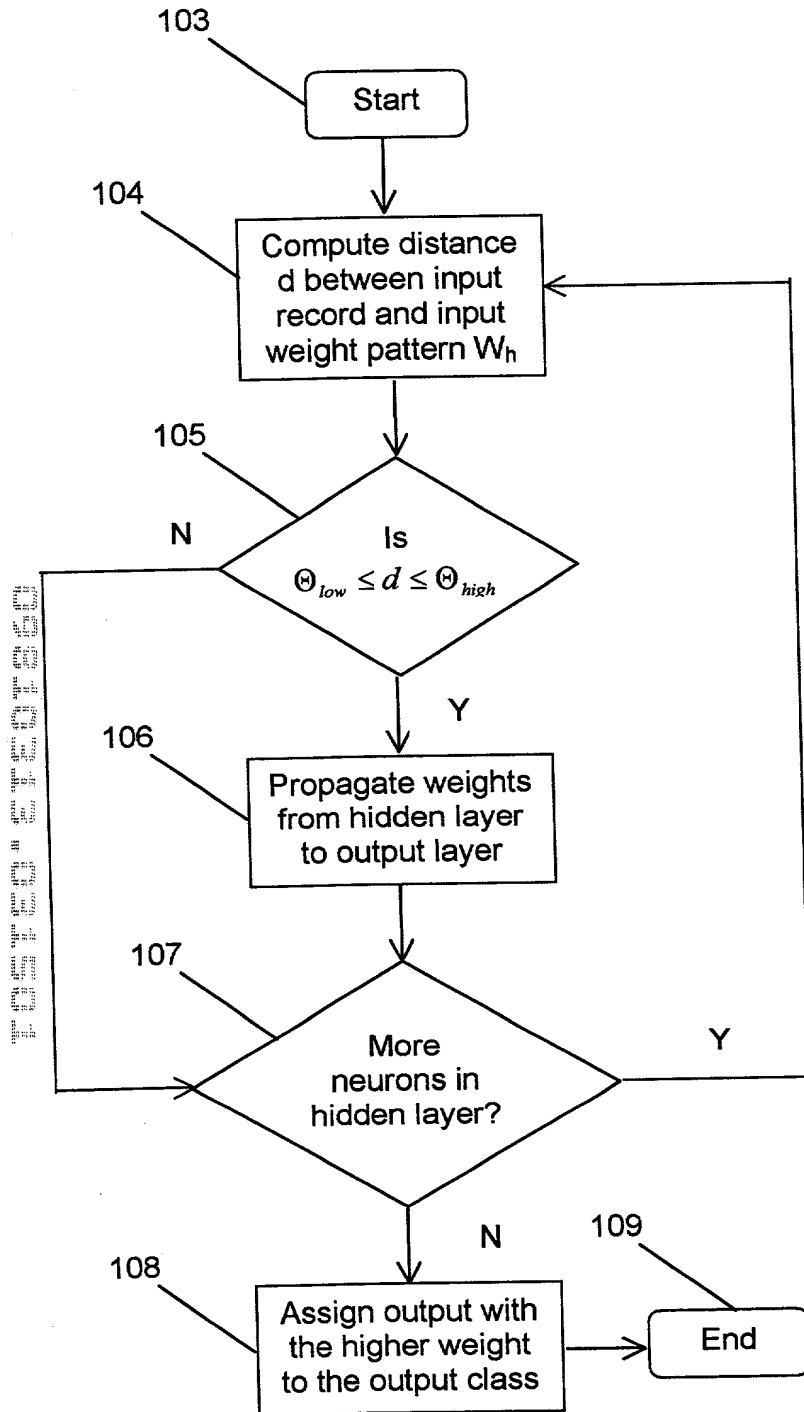


FIG. 16

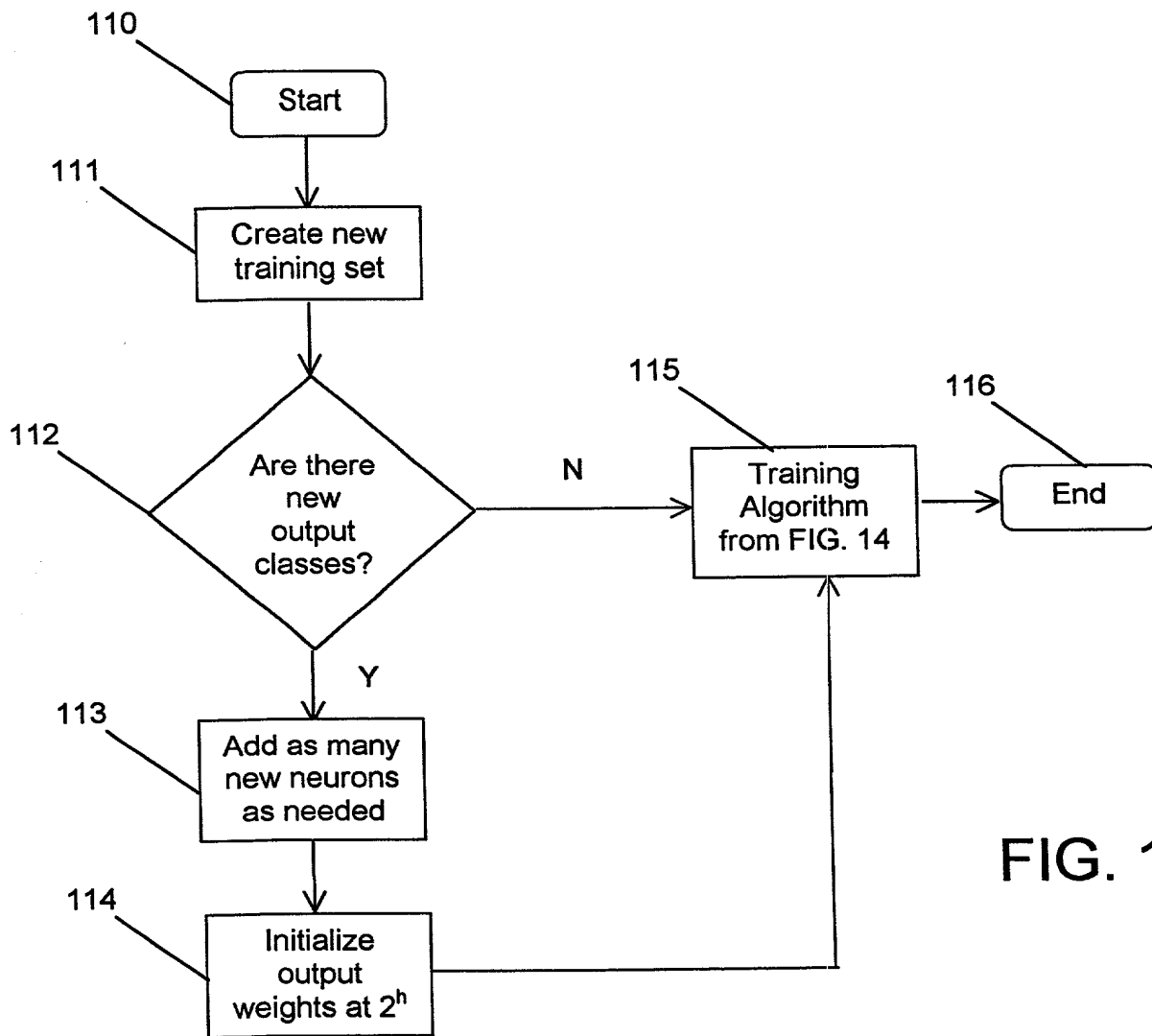
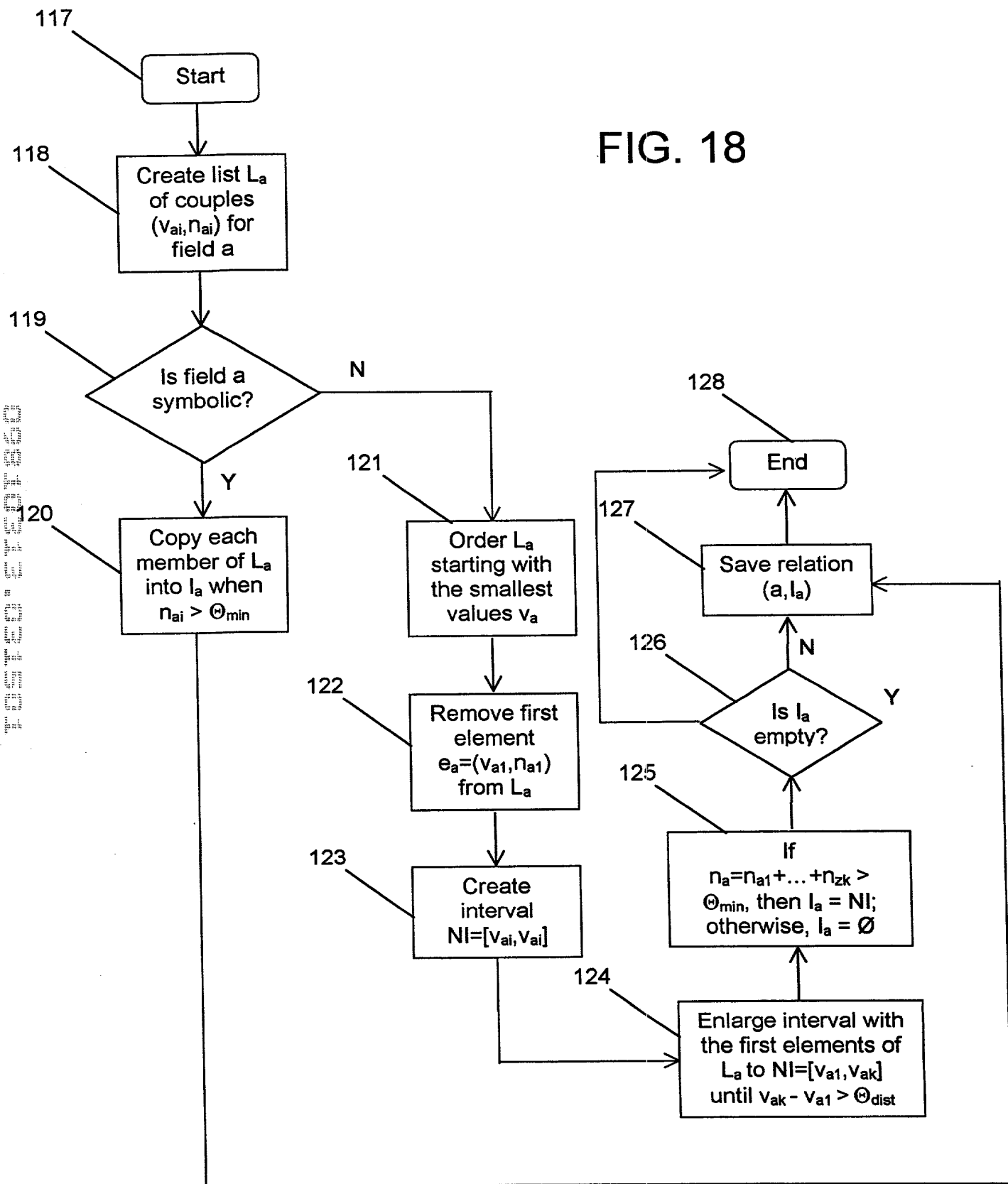
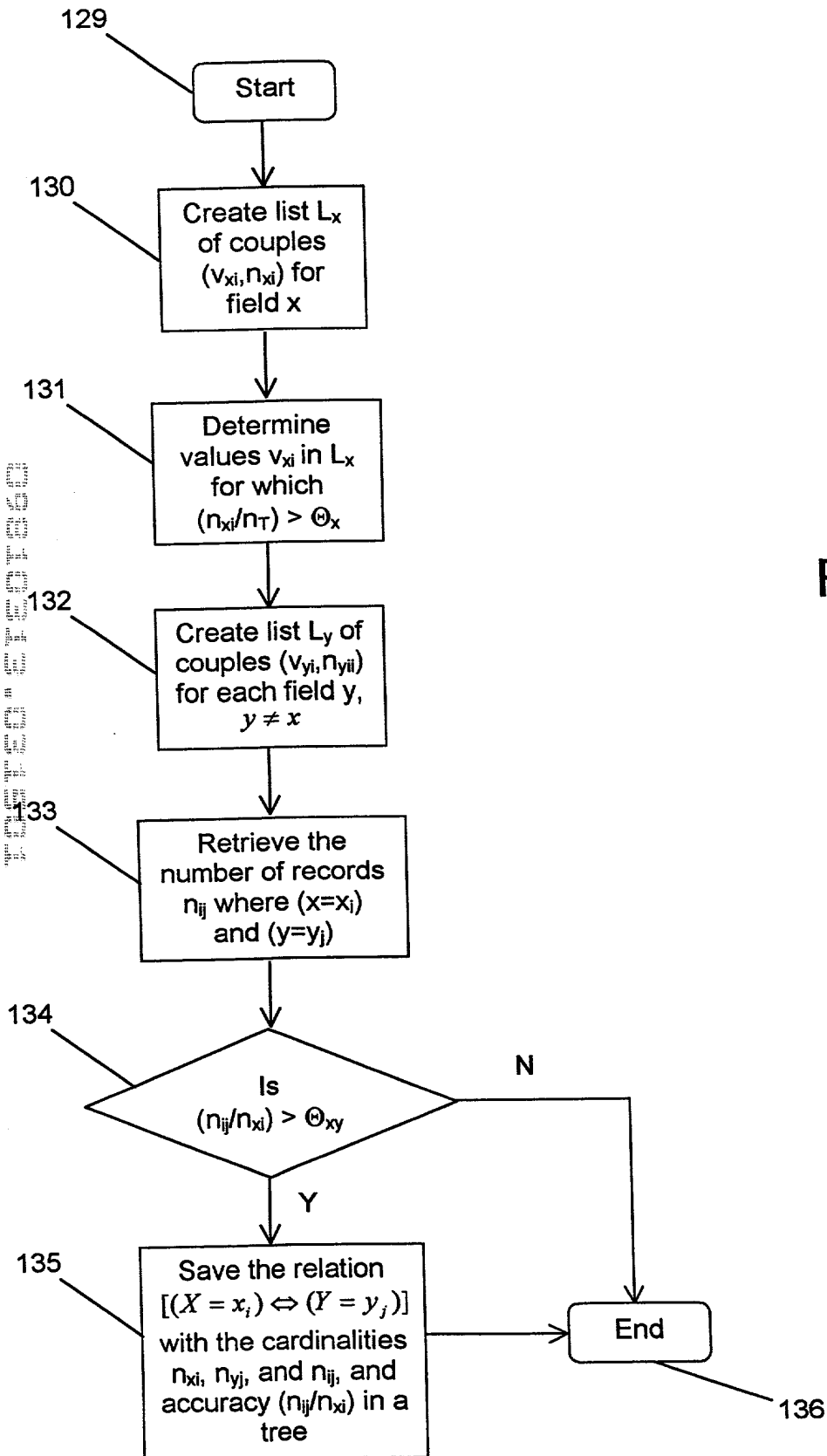


FIG. 17

FIG. 18





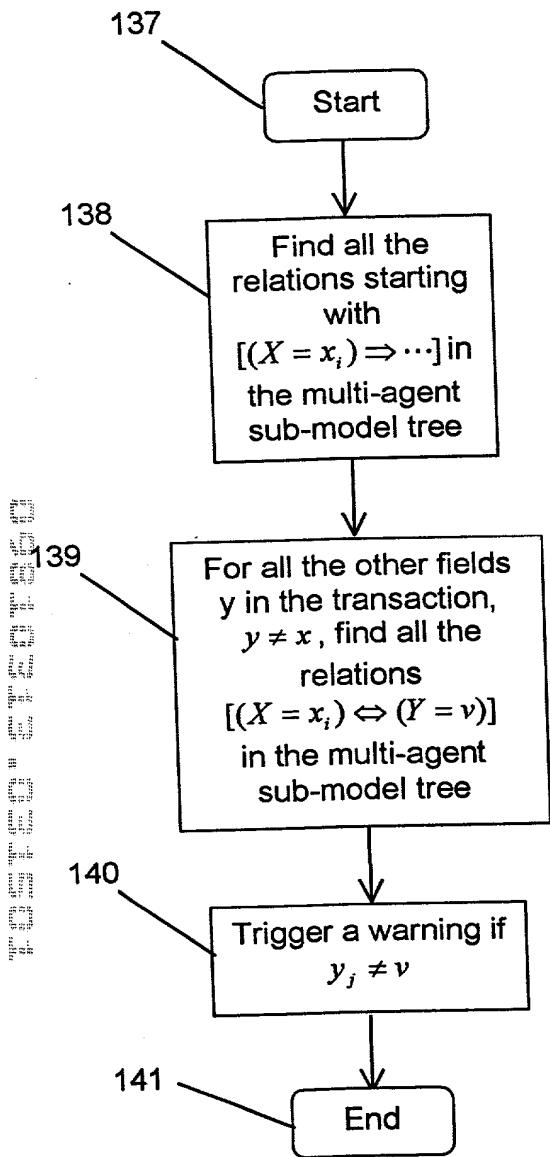
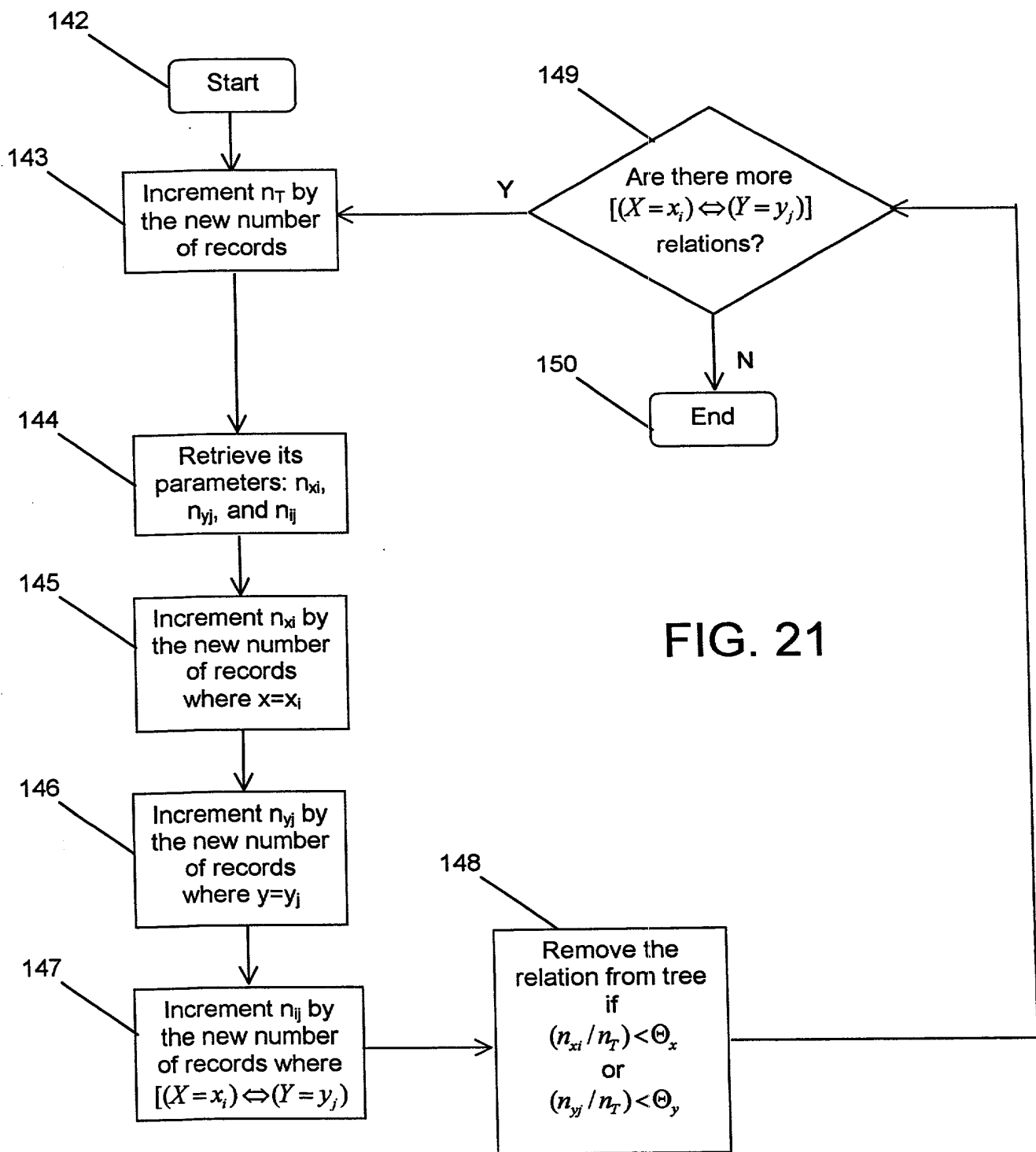


FIG. 20



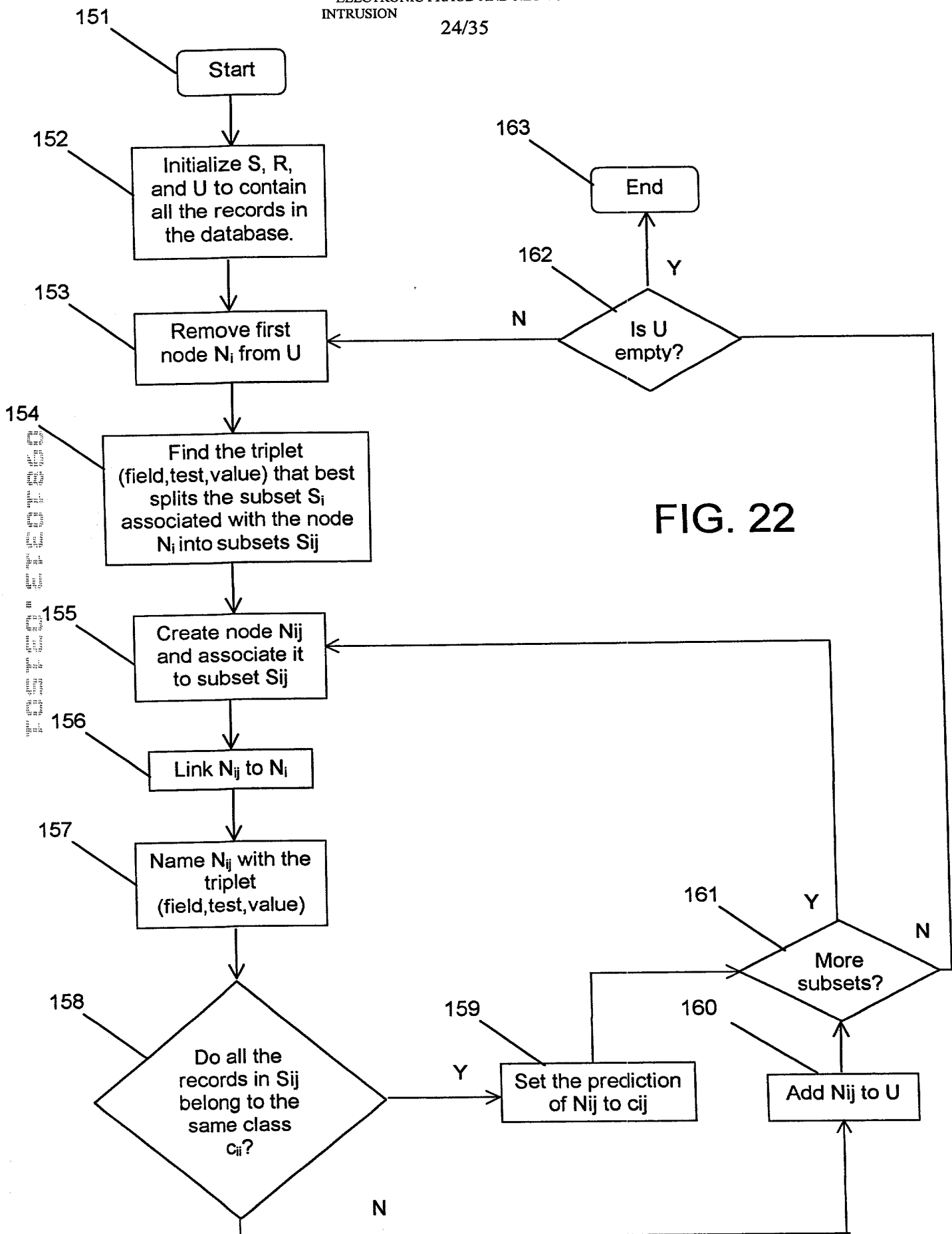


FIG. 22

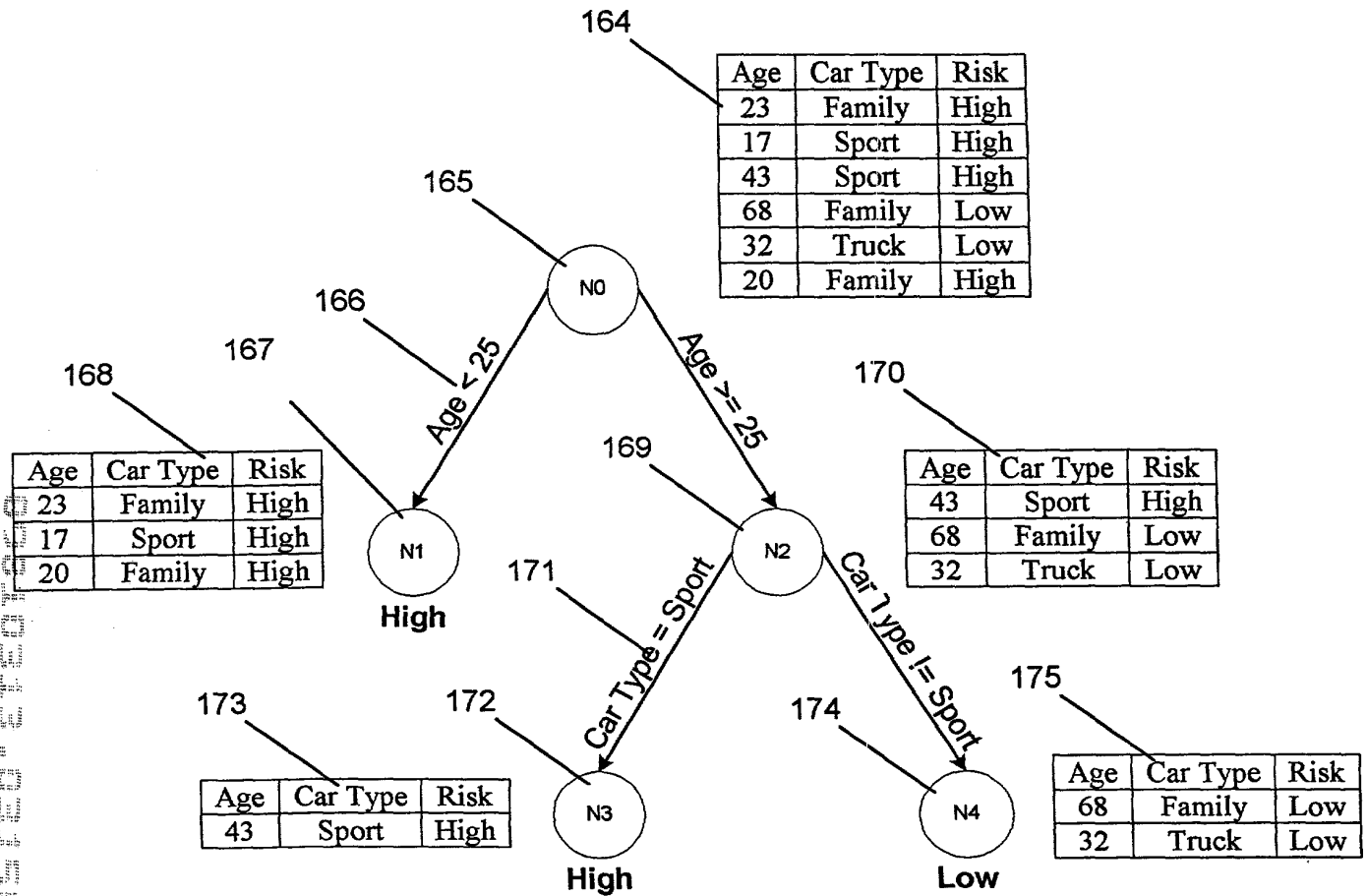


FIG. 23

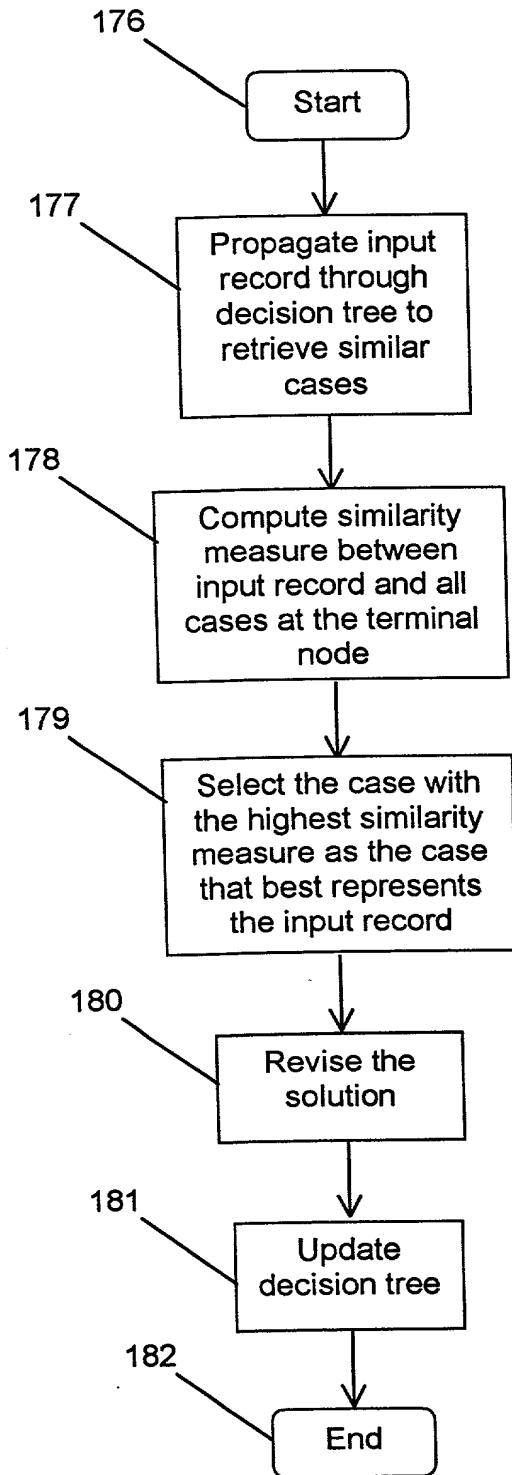


FIG. 24

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Global Similarity Measure	Expression
City-block	$\frac{1}{p} \sum_{i=1}^p sim_i(V_{1i}, V_{2i})$
Weighted city-block	$\frac{1}{p} \sum_{i=1}^p w_i * sim_i(V_{1i}, V_{2i})$
Euclidean	$\frac{1}{p} \sqrt{\sum_{i=1}^p sim_i(V_{1i}, V_{2i})^2}$
Minkowski	$\frac{1}{p} \sqrt[p]{\sum_{i=1}^p sim_i(V_{1i}, V_{2i})^p}$
Weighted Minkowski	$\sqrt[p]{\sum_{i=1}^p w_i * sim_i(V_{1i}, V_{2i})^p}$
Weighted maximum	$\max_i w_i * sim_i(V_{1i}, V_{2i})$

FIG. 25

Local Similarity Measures	Field Type	Field Valuation
$\begin{cases} 0, \text{if } V_1 \cap V_2 = \emptyset \\ 1, \text{otherwise} \end{cases}$	Nominal	Single, multiple
$\frac{\text{Card}(V_1 \cup V_2) - \text{Card}(V_1 \cap V_2)}{\text{Card}(V_1 \cup V_2)}$	Nominal	Multiple
$\frac{\text{Card}(V_1 \cup V_2) - \text{Card}(V_1 \cap V_2)}{\text{Min}(V_1 \cup V_2)}$	Nominal	Multiple
$\frac{\text{Card}(V_1 \cup V_2) - \text{Card}(V_1 \cap V_2)}{\text{Max}(V_1 \cup V_2)}$	Nominal	Multiple
$\frac{\text{Card}(V_1 \cup V_2) - \text{Card}(V_1 \cap V_2)}{\text{Card}(O)}$	Nominal	Multiple
$\frac{ec(\min(V_1^-, V_2^-), \max(V_1^+, V_2^+)) - \text{Card}(V_1 \cap V_2)}{\text{Card}(O)}$	Ordinal, Numeric	Multiple
$\frac{ V_1 - V_2 }{ec(O)}$	Numeric	Single
$\frac{ V_{1c} - V_{2c} }{ec(O)}$	Numeric	Multiple
$\frac{ec(\min(V_1^-, V_2^-), \max(V_1^+, V_2^+)) - ec(V_1 \cap V_2)}{ec(O)}$	Numeric	Multiple
$\frac{ec(V_1 \cup V_2) - ec(V_1 \cap V_2)}{ec(V_1 \cup V_2)}$	Numeric	Multiple
$\frac{ec(V_1 \cup V_2) - ec(V_1 \cap V_2)}{\min(ecV_1, ecV_2)}$	Numeric	Multiple
$\frac{ec(V_1 \cup V_2) - ec(V_1 \cap V_2)}{\max(ecV_1, ecV_2)}$	Numeric	Multiple
$\frac{2 * h(V_1 \cup V_2) - h(V_1) - h(V_2)}{2 * h_{\max}}$	Taxonomic	Multiple
$\frac{h(\text{node that unit } V_1 \text{ \& } V_2)}{\text{total height of } h}$	Taxonomic	Single

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IF (certain specified condition occur in the
data record) —————

185a

THEN (take the appropriate action) —————

185b

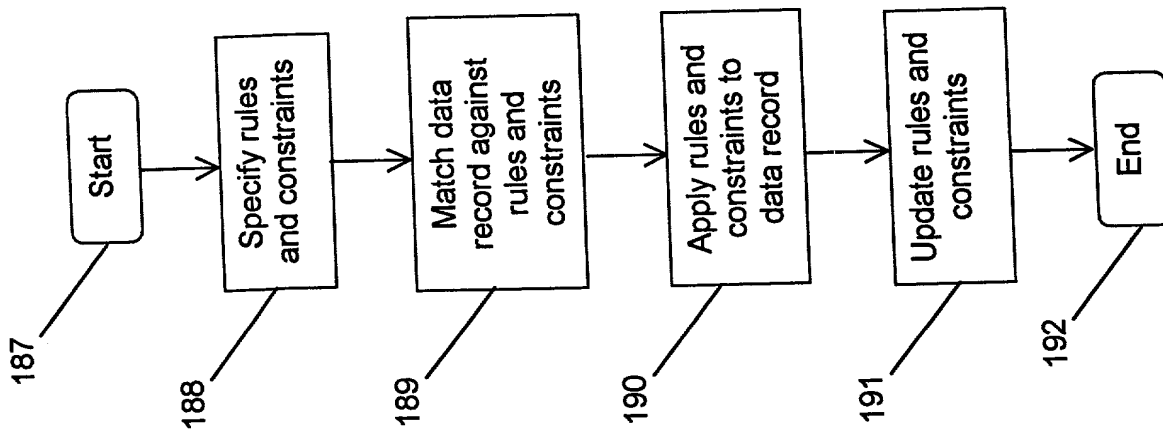
FIG. 27

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$\text{tall}(x) = \{ 0, \quad \text{if height}(x) < 5 \text{ ft.},$
 $(\text{height}(x) - 5 \text{ ft.}) / 2 \text{ ft.}, \quad \text{if } 5 \text{ ft.} \leq \text{height}(x) \leq 7 \text{ ft.},$
 $1, \quad \text{if height}(x) > 7 \text{ ft.} \}$

FIG. 28

FIG. 29



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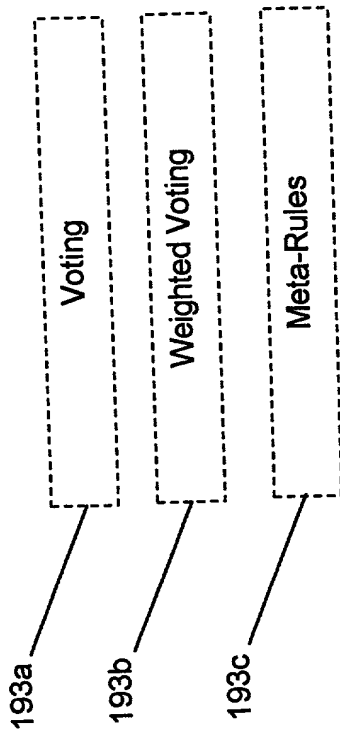
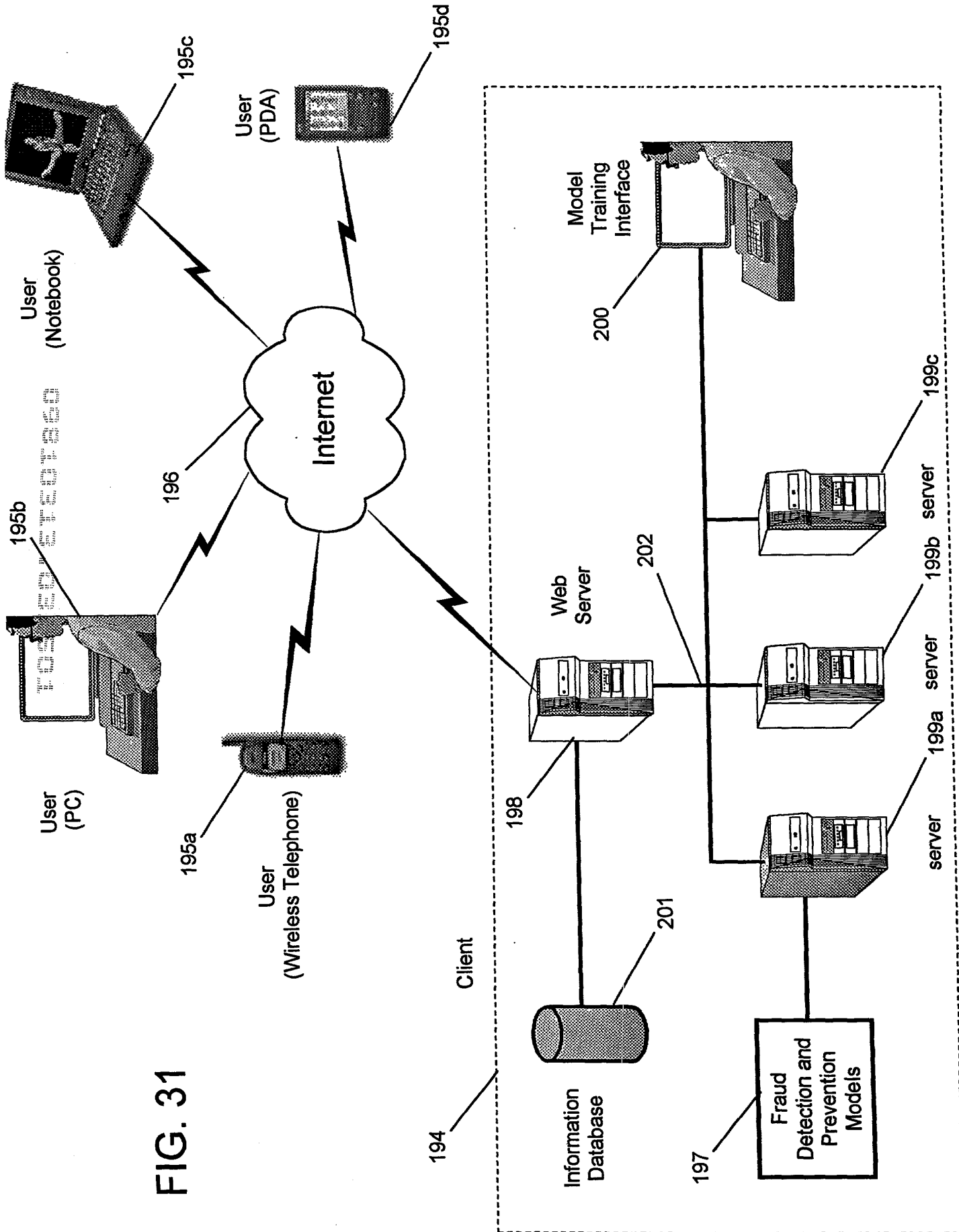
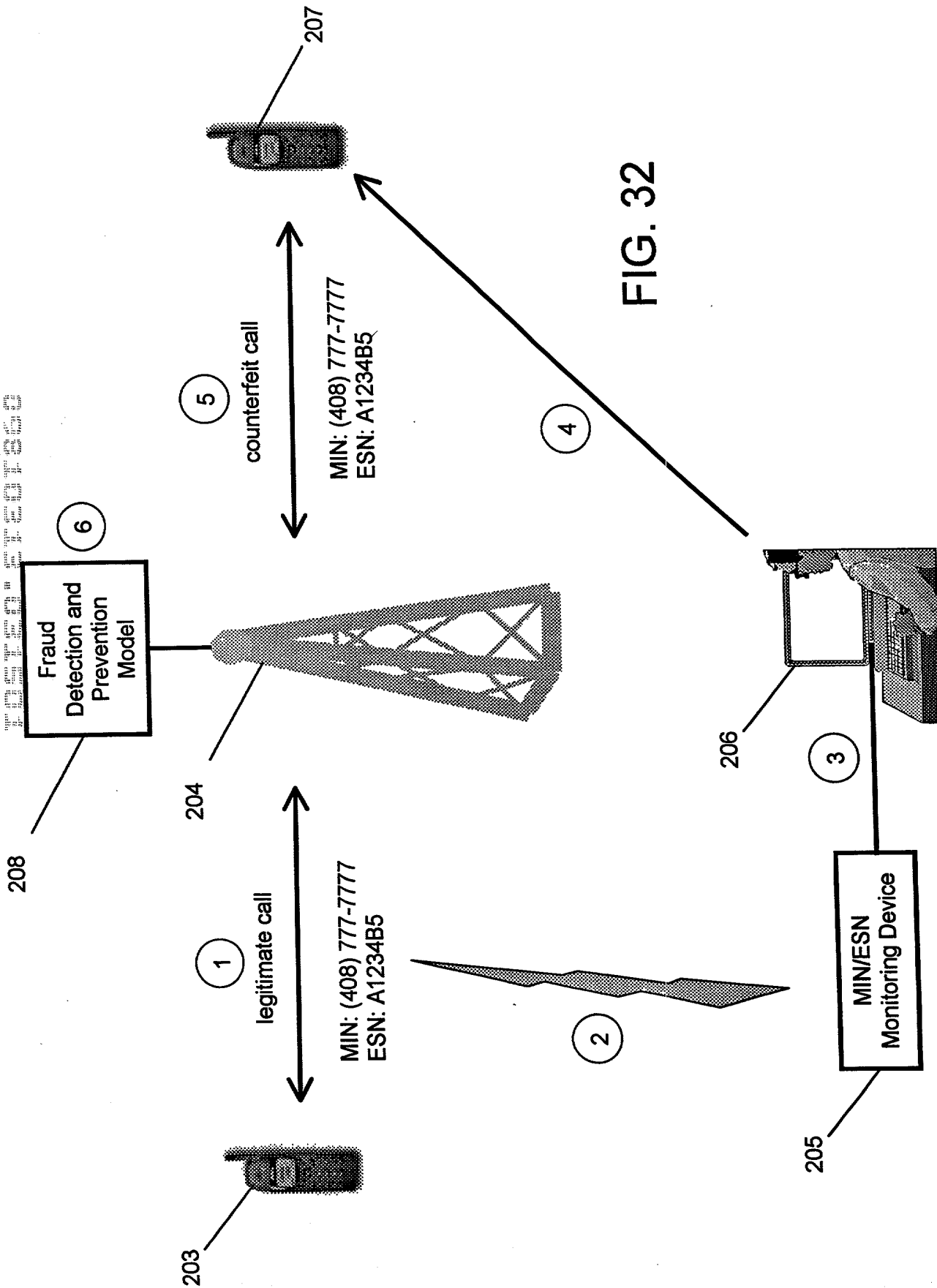


FIG. 30

FIG. 31





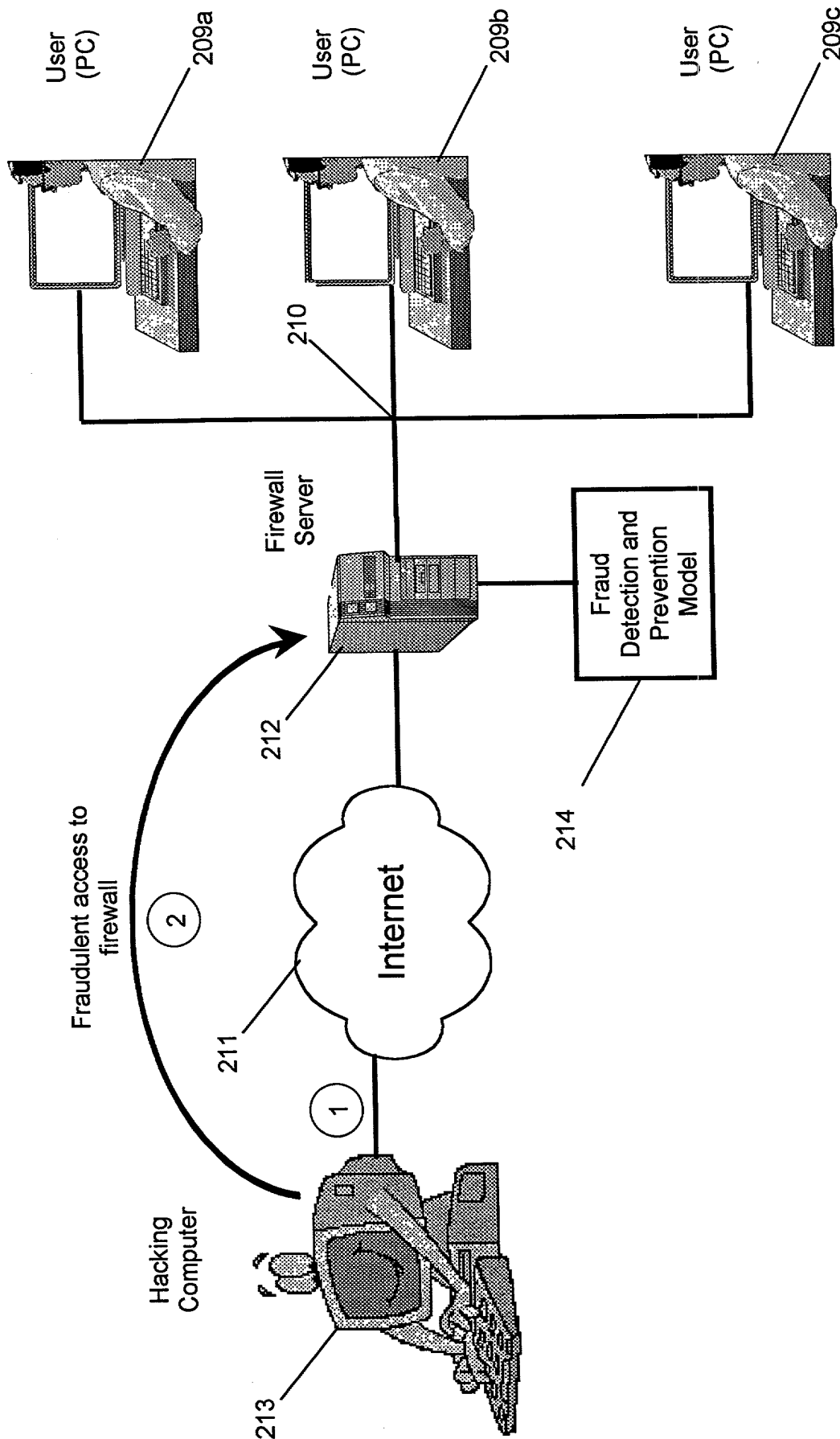


FIG. 33

FIG. 34

Prediction for model Kdd99.ifm

DURATION	PROTOCOL_TYPE	SERVICE	DST_HOST_SRV_ERROR_RATE	DST_HOST_ERROR_RATE	DST_HOST_SRV_ERROR_RATE

search reset

[Samples List](#)

Address: http://localhost/jm_KDDCUP_DATA.htm

local intranet